

BIOTECHNOLOGY

Biotechnological research has the potential to considerably impact all biological systems (human, microbial and plant). This is of particular significance in the areas of genetic manipulation, immunization mechanisms (vaccines), and cell and tissue cultures as they apply to the sectors of agriculture, industry and forestry. It has resulted in stunning economic growth. Worldwide revenues from biotechnology were \$10 000 000 five years ago, will be \$100 000 000 this year and will reach \$40 000 000 000 in the next century. It is therefore clear that today's choices will have their biggest repercussions tomorrow.

Scientific investments in the two countries are on the same scale as their ambition. In France this involves more than one billion francs just for the public sector (about 1 500 researchers), which represents more than 30% of the resources of life science research organizations. In Canada, \$100 million (20 to 25% of public sector research funds) goes into this field.

Consequently, areas in which fruitful co-operation is currently being pursued have been identified. They should continue to be supported by calling as much as possible upon the resources of various organizations themselves. However, new fields of co-operation should be introduced which have not yet been adequately identified, such as food and agricultural applications.

The four broad areas selected (see Appendix V) are:

- (1) Molecular biology research on both plant and animal cells to acquire an in-depth knowledge of the biological mechanisms involved in genetic evolution and transmission.
- (2) Genetic engineering, for plant improvement and the effort to combat potential enemies of crops, including insects and disease. In this area, special attention has been given to oil-yielding plant species (rape). It should henceforth be extended to fodder crops (alfalfa), and to forest vegetation, with a special focus on better control over sexual and asexual reproduction as well as the creation of transgenic material.

Research priorities for these various materials relate to resistance to diseases and product quality.

- (3) Applications in the animal sector will be concentrated on immunity acquisition techniques: diagnosis, resistance to diseases through the creation of resistant strains (transgenic animals), as well as the production of synthetic vaccines.